

CASES TREATED BY RADIUM IN THE ROYAL
INFIRMARY, EDINBURGH, DURING 1912.*

BY

DAWSON TURNER, M.D., F.R.C.P. EDIN.,
M.R.C.P. LOND., F.R.S.E.,IN CHARGE OF RADIUM TREATMENT AT THE ROYAL INFIRMARY,
EDINBURGH.

FORTY-ONE patients have attended for radium treatment during the past year. Twelve of these suffered from malignant disease, eleven from rodent ulcers, eleven from naevi, one from leucoplakia, one from lymphadenoma, one from spring catarrh, one from tuberculous glands, one from a tuberculous ulcer of the dorsum of the hand, one from a papilloma, and one from hypertrichosis.

Many of these patients received prolonged treatment or attended a considerable number of times; thus, in some of the malignant cases, whenever indeed it was possible, a tube of radium was inserted into the growth and maintained there for periods up to twelve days, while at the same time external treatment was employed so as to subject the growth to a cross fire of rays.

The treatment of port wine stains must also be very prolonged; as a cosmetic effect is desired, very small doses have to be given, and the result carefully observed, lest an atrophic condition of the skin be produced.

Radium treatment, as a rule, is conducted in the following manner: A dose large enough in the experience of the expert to produce the desired effect is administered, and the patient is sent away and told to report himself in two or three weeks, for the full effect of any dose is not manifested for three or more weeks. Another dose, if necessary, is then given, and the patient again sent away for a fortnight. I have not time here to refer to the question of dosage or of screens.

Naevus.

The cases which have been most benefited during the year have been those of naevus and rodent ulcer. Of eleven naevi—of which two were port wine stains—seven were cured, three are under treatment, and one (port wine stain) did not return.

Rodent Ulcer.

Rodent ulcers, if not affecting mucous membranes, cartilage, or bone, are also extraordinarily amenable to radium. The reasons why radium is so superior to carbonic snow or zinc ionization or excision are, first, because the rays penetrate deeply—in fact, right through the body (the gamma rays will penetrate 10 in. of lead), so that the very roots of the rodent are attacked; secondly, because the treatment is absolutely painless; and thirdly, because the cosmetic result leaves nothing to be desired. Of eleven rodent ulcers six were cured, one is under treatment, three did not return, and one was unsuitable for radium treatment. Of the cases that were cured, one affected the upper lip, and was on the point of penetrating it. Three were in the furrow between the nose and cheek; they had received unavailing prolonged treatment with *x* rays. One, a case of Professor Caird's, was on the ala nasi; it measured $\frac{3}{4}$ in. by $\frac{1}{2}$ in., and was on the point of penetrating; one dose of 65 milligram-hours sufficed to cause complete healing with a beautiful cosmetic result and no contraction. The disease has, however, recurred in this case a little distance off on the tip of the nose. An application of radium has accordingly been made to it, and I have no doubt of a successful issue. The sixth was above the right eye. In another case of Mr. Caird's—a male aged 61—the disease began many years ago as a pimple on the right side of the nose; eight years ago this was removed; on its return it affected the internal canthus, and Mr. Caird operated twice, in 1909 and 1912; on the latter occasion, recognizing that he had not removed all the growth, he recommended him to me for radium treatment. I placed two tubes of radium into the cavity, which was nearly 2 in. deep, and kept them there for thirty hours; no screen but a thin tube of aluminium was employed. This was on May 4th, 1912. In July the cavity had almost filled up, but for precaution's sake I gave a dose of 47 mg. of radium for thirty minutes. In December, 1912, he called, quite cured.

* Read to the Edinburgh Medico-Chirurgical Society.

Two of the cases of rodent ulcer were treated by the insufflation of the radio-thorium emanation. One of these was a male, aged 49, recommended by Professor Caird; six years previously enucleation of the left eye had been performed by Dr. G. Mackay. The disease had recurred, and now formed a sloughy ulcer, about the size of half a crown, below the left orbital cavity, leading to extensive excavations beneath the cheek. As the disease was too extensive and too difficult of access for the limited amount of radium at my disposal, the idea occurred to me to treat it by blowing into it the radio-thorium emanation, which would be carried into the remotest corners of the excavations, and would coat the walls with a highly radio-active deposit. I did this some twenty times in the course of a few hours, and the immediate effect seemed to be to diminish the fetor; unfortunately the patient did not return for further treatment. The second case treated by the radio-thorium emanation was a male, aged 60, recommended by Mr. Wallace. The duration of the disease was fifteen years; he had been treated by *x* rays, and Mr. Wallace had performed enucleation of the left eye three years ago. A later operation had also been performed by Mr. Wallace. At the time the radium treatment was begun there was an ulcer with everted edges occupying the left superior border of the nose, and extending deeply into the orbital cavity. As he was an in-patient I instructed the nurse to insufflate the cavity with the emanation every half-hour during the day for one minute at a time. This was done for ten days, when it was thought advisable to supplement the emanation by the application of solid radium. After four days of the combined treatment he was sent home. He had had 176 insufflations of the emanation and 235 milligram-hours application of solid radium. A fortnight later he returned very much improved; the nasal ulcer was practically healed. When another fortnight had elapsed he was re-admitted and treated again by the combined method for three days. On his reporting himself a month later (January 8th, 1913) there was further improvement. The total dose was 208 insufflations of the radio-thorium emanation and 675 milligram-hours of solid radium. He has not reported himself since.

Malignant Disease.

Twelve cases of malignant disease attended the department during the year. With one exception they were all inoperable cases; with two exceptions they were either recurrences or secondary deposits. Of these twelve cases one was healed with a sound scar, as well as a recurrence in the neighbourhood; three were improved; one exhibited temporary improvement; one, a carcinoma of the pharynx, was unrelieved and died; of the remaining six, two are still under treatment, one did not return for treatment, one refused treatment, in one a prophylactic dose of radium was given after an operation for removal of a sarcomatous growth in the groin, and in one the growth was so extensive as to render a resort to treatment with a limited amount of radium hopeless.

With the exception of the sarcoma referred to above all the cases were of a carcinomatous nature, and in five of them the upper or lower jaw was the seat of the disease. Brief details of the cases are as follows:

1. A female, aged 49, with a recurrent epithelioma of the right ala nasi, recommended by Mr. Wallace. The patient had long suffered from an ulcer on the ala nasi; prolonged treatment with *x* rays and weak radium preparations, followed by excision. Condition on admission on June 25th, 1912: There is an ulcerating crack on the external surface of the right ala nasi. A single dose of 95 mg.-hours of radium bromide screened by glass and aluminium was administered. On July 9th there was a good reaction; the scab did not come away until the middle of September, when the ulcer was found to be completely healed over. On January 28th, 1913, the scar was still in a perfectly sound condition, but a small ulcer had appeared just within the nostril on the septum nasi. This was given a dose of 40 mg.-hours of radium bromide, screened as before by glass and thin aluminium, with a completely successful result.

2. A female, aged 70, recommended by Dr. Sym. Epithelioma of one year's duration affecting the upper lid and canthi of the left eye. Had twenty-four full doses of *x* rays. Condition on admission: There is an irregular ulcer eating away the lower margin of the upper lid and involving the canthi; the body of the lid is hard and swollen. Treatment commenced on January 20th, 1912, and continued at intervals to May, 1912. Great improvement followed. The ulcer healed and the swelling disappeared. On May 22nd, 1912, Dr. Sym examined her, and

wrote: "There is very great improvement, very great indeed, but whether the cancer is all gone or not I can't be sure." On June 20th the patient returned with a hard lump external to the external canthus; this was given one good dose of radium and the patient sent home. On October 29th, 1912, she returned much worse, with the bone affected. Mr. Hodsdon excised the growth by an operation which opened into the frontal sinus. A prophylactic dose of 210 mg.-hours of radium was then administered.

3. A male, aged 44, recommended by Professor Caird. A rapidly-growing recurrent epithelioma of the right upper jaw, operated on twice within five months by Professor Caird. There is a large ulcer extending backwards on the mucous membrane of the buccal cavity on the right side; the skin outside is red and angry looking. On November 7th, 1911, external and internal applications of radium were commenced; the external applications were shielded by a sheet of silver half a millimetre in thickness, the internal by a thin sheet of aluminium. On December 4th, 1911, he was sent home after a total dose of 1,011 mg.-hours. The disease had ceased to extend and considerable improvement was manifest. On January 9th, 1912, he returned in a worse condition; there was a large external swelling, and Professor Caird thought that further treatment would be useless.

4. A female, aged 42, recommended by Mr. Hodsdon. An epithelioma following lupus; duration thirty years. The disease has been treated by both medical and surgical means; it has had courses of x rays extending over years; it has been scraped, cauterized, and partially excised. Present condition: Below the left nostril there is an irregular ulcer eating into the lip; it is 2 in. broad by 1 in. long, and it has raised margins, except where it is spreading on to the mucous membrane of the lip; there is a perforation below the left nostril. Treatment was begun on November 28th, 1912; 25 mg. of radium bromide (International standard), screened only by glass and aluminium, were applied to successive areas of the ulcer for a few hours daily during a week; the dose amounted to 1,620 mg.-hours. This was followed in three weeks' time by a strong reaction, and afterwards considerable improvement was manifest, healing was going on above, granulation tissue was present, and malignant characters were absent. The patient is to return for more treatment.

5. A male, aged 72, recommended by Dr. Elder. Malignant disease of the fauces and pharynx. Duration more than a year; difficulty in swallowing and speaking. An irregular swelling can be observed, involving the soft palate and uvula and causing great deformity. Left cervical glands enlarged. Both Professors Alexis Thomson and Caird considered the case quite inoperable. With the hope of relieving his symptoms, radium treatment was commenced. On September 19th, 1912, a capsule, containing 40 mg. of radium bromide, was attached to an aluminium rod and held by the patient against the affected part for one hour two or three times a week; only an aluminium screen was used. By November 28th, 1912, the patient had received a dose of 388 mg. hours. The applications appeared to relieve his pressing symptoms, but he gradually sank and died on December 14th, 1912.

6. A male, aged 35, recommended by Professor Alexis Thomson. Diagnosis: Round-celled sarcoma situated in the groin. Duration twelve months; was admitted to the Royal Infirmary on January 11th, 1913, complaining of a lump the size of one and a half fists in the groin and of increasing weakness; the left leg was oedematous. On January 17th, 1913, Professor Thomson removed the growth, which proved to be a round-celled sarcoma. On January 30th, 1913, a tube of glass in an aluminium cover, containing 10 mg. (International standard) of radium bromide, was inserted into the wound and kept there for twenty-four hours. This was intended to act as a prophylactic measure.

7. A female, aged 54, recommended by Mr. Miles. History: In September, 1911, the patient had been admitted to Chalmers Hospital, complaining of a hard, painful lump in the left axilla. Mr. Stiles removed the mass and the breast; both were found to be the seat of a medullary carcinoma. Readmitted May 28th, 1912, with a rapidly growing recurrence in the scar; this was excised on May 31st, 1912. Returned at the beginning of 1913 with a secondary growth affecting the sternum. The patient recommended to the Royal Infirmary; was admitted by Mr. Miles. Projecting from the sternum was a hemispherical growth, in area about the size of a teacup saucer and raised nearly an inch above the general surface. The skin over it was reddened. The patient complained of spasms of severe lancinating pain. Treatment: Two tubes of radium, each containing 5 mg. (International standard), were introduced by Mr. Miles into the growth, screened only by glass and aluminium, and were kept in for seven and for twelve days respectively, being moved occasionally so as to expose a fresh area to the radiation. At the same time applications of 25 mg. (International standard) screened by silver were made externally. The total internal dose was 2,400 mg.-hours; the total external dose was 800 mg.-hours. Under this treatment the tumour rapidly flattened down, and in six weeks' time had disappeared. Some pus was discharged from the incisions, and a good deal of reaction was manifest on the skin. The lancinating pain disappeared shortly after the applications. The patient expressed herself as very grateful. She is still under observation.

Of the remaining 5 cases 1 did not return for treatment, 2 are still under treatment, 1 refused treatment, and in 1

treatment was refused on account of the extensive nature of the growth.

Leucoplakia.

A male, aged 52, recommended by Professor Alexis Thomson, has attended since October, 1911, for radium treatment. He has a specific history. The duration of the disease was one year. On the surface and side of the left half of the tongue there were several whitish, hard patches somewhat raised above the surface. Ten mg. of radium bromide (International standard) were enclosed in an aluminium box and applied for an hour at a time twice a week to the patches. The effect of the treatment is to improve and check the development of the disease, because if it be intermitted, as in the holidays, the condition rapidly becomes worse. The patient refuses operation and he has had prolonged courses of internal treatment, also an injection of salvarsan. Stronger and more prolonged doses of radium would, I think, produce more decided benefit.

Lymphadenoma.

A male, aged 18, was recommended by Dr. Byrom Bramwell for radium treatment in November, 1911. There were growths round the neck and in the groin and axilla. The circumference of the neck measured 17½ in. The neck was treated by external applications screened by silver. No improvement resulted, and after a total dose of 1,983 mg.-hours given in one week treatment was suspended.

Spring Catarrh.

A male, aged 9, recommended by Dr. George Mackay, was an old case, whose right eye had already been cured by radium treatment, but whose left eye had not had sufficient treatment. He was given a dose of 5 mg.-hours by the application of a 10-mg. capsule to the eyelid for half an hour. This patient had first attended in March, 1910. Both upper lids were covered on their internal surface with the typical granulations and pavement-like blocks. The lids were much swollen. The right lid only was first treated, and in three months was practically well after a dose of 32.5 mg.-hours. Treatment of the left eye was then begun.

Tubercle.

Tuberculous Glands.—Only one patient, recommended by Dr. J. Burnet, suffering from enlarged cervical glands, attended the department, and he did not return.

Tuberculous Ulcer.—A boy, aged 3½ years, recommended by Dr. Railston Richardson, attended for radium treatment of tuberculous ulcer on the dorsum of the right hand. It had existed for two years and had been treated with iodine, caustics, etc. There were two patches close together, measuring nearly half an inch in diameter, dark red, and slightly elevated. Treatment was begun on December 3rd, 1912, and continued for a fortnight, by which time the dose amounted to 20 mg.-hours. Only a screen of aluminium was employed. In a month the patches were covered by a good scab, which fell off at the end of January. The patches had almost disappeared, but to aid in the cure a further dose of 13 mg.-hours has been administered. The patient is still under observation.

Papilloma.

A female, aged 51, recommended by Dr. Davidson of Kelso, was admitted on October 8th, 1912, with a papilloma on the left side of the nose. It was half an inch wide and raised a quarter of an inch above the surface, and it was composed principally of horny material. The duration had been about five years, but latterly it had been growing more rapidly. The patient had had a previous growth removed some years ago from a position a little higher up. A dose of 35 mg.-hours, screened by aluminium, was administered by a single application. In a fortnight the growth fell off; in seven weeks there was perfect healing, the site of the growth being covered by a beautiful supple skin.

Hypertrichosis.

A female, aged 25, recommended by Dr. Fleming, attended for a week during September, 1912, for the radium treatment of this condition. The patient had a thick, hairy growth round the lower border of the chin. After the patient had been made aware of the difficulties of the method of treatment, applications screened by aluminium of 5 mg.-hours were made over successive areas. These proved to be insufficient to produce epilation. The patient proposes to return later on.

ARGYLLS LIMITED (Alexandria, Dumbartonshire) have issued an illustrated catalogue of their 1913 cars. In addition to the specification for cars of various powers, there is an interesting note on the braking problem by Mr. G. H. Cutbush. It deals with the application of the diagonal system of braking—that is to say, the application of the brake to the rear wheel on one side and to the front wheel on the other. If the brakes are compensated, retardation is produced on each side, with the result, as it is claimed, that the tendency of the car to turn one way, owing to the loss of adhesion at the rear, is counteracted by the tendency to turn in the other direction, produced by the reduced adhesion at the front wheels. The catalogue also contains a full account of the Argyll single sleeve-valve engine, illustrated by diagrams which make its mode of action clear.